UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF NEW YORK

SIGNIFY NORTH AMERICA CORPORATION and SIGNIFY HOLDING B.V., *Plaintiffs/Counter-Defendants*, v. SATCO PRODUCTS, INC., *Defendant/Counter-Plaintiff.*	Case No. 2:19-cv-06125-JMA-SIL

SATCO'S RESPONSIVE CLAIM CONSTRUCTION BRIEF

TABLE OF CONTENTS

TABLE OF AUTHORITIES

TABLE OF ABBREVIATIONS

Abbreviation	Description
Satco	Defendant and Counter-Plaintiff Satco Products, Inc.
Signify	Plaintiffs and Counter-Defendants Signify North America Corporation and Signify Holding B.V.
Op. Br.	Signify's Opening Claim Construction Brief, Dkt. No. 109
Gershowitz Decl.	Declaration of Michael Gershowitz in Support of Signify's Opening Claim Construction Brief
Zane Decl.	Declaration of Regan Zane in Support of Signify's Opening Claim Construction Brief
Curran Decl.	Declaration of John W. Curran, Ph.D in Support of Satco's Responsive Claim Construction Brief
Shackle Decl.	Declaration of Peter W. Shackle, Ph.D in Support of Satco's Responsive Claim Construction Brief
'604 patent	U.S. Patent No. 7,348,604
'929 patent	U.S. Patent No. 7,358,929
'525 patent	U.S. Patent No. 6,972,525
'328 patent	U.S. Patent No. 8,070,328
'554 patent	U.S. Patent No. 7,256,554
'399 patent	U.S. Patent No. 7,038,399
'138 patent	U.S. Patent No. 7,352,138
POSITA	Person of ordinary skill in the art

TABLE OF EXHIBITS[1]

Exhibit No.	Description
A	Deposition transcript of Michael Gershowitz, dated December 11, 2020
B	Documents bearing the Bates Nos. SATCO-SIG-000151542-000151555
C	Applicant's response dated June 10, 2014, from the file history of the European Patent Application No. 06741539.8 - 1564
D	Applicant's response dated December 29, 2014, from the file history of the Canadian Patent Application No. 2,616,007
E	Josh Perry, *Picking the Right Heat Sink Attachment to Avoid Costly PCB Damage*, Advanced Thermal Solutions, July 18, 2017
F	*Thermal Conductivity of selected Materials and Gases*, Engineering ToolBox (2003), *available at*: https://www.engineeringtoolbox.com/thermal-conductivity-d_429.html (accessed December 20, 2020)
G	*Thermal Conductivity of Metals, Metallic Elements and Alloys*, Engineering ToolBox (2005), *available at*: https://www.engineeringtoolbox.com/thermal-conductivity-metals-d_858.html (accessed December 20, 2020)
H	Seri Lee, *How to Select a Heat Sink*, Electronics Cooling, June 1, 1995
I	Simon Dalley, *What Makes a Good Heat Sink?* Elmelin Ltd., June 19, 2019.
J	*Heat Sink Fabrications Guide*, Boyd Corporation, September 2020
K	Excerpt of Merriam-Webster's Collegiate Dictionary, 11th ed. 2006
L	Deposition transcript of Regan Zane, dated December 14, 2020
M	Excerpts of IEEE 100: The Authoritative Dictionary of IEEE Standards Terms, 7th ed. 2000
N	Excerpt of R. W. Erickson and D. Maksimović, *Fundamentals of Power Electronics*, 2nd ed. 2001
O	TNY264/266-268 Datasheet
P	Excerpts of Colonel Wm. T. McLyman, *Transformer and Inductor Design Handbook*, 2nd ed. 1988
Q	Excerpt of R. W. Erickson and D. Maksimović, *Fundamentals of Power Electronics*, 3rd ed. 2020
R	File history of U.S. Patent No. 7,256,554

[1] Unless otherwise noted, all exhibits to this brief are attached to the Declaration of Nicholas A. Brown, submitted concurrently herewith.

I. INTRODUCTION

There are seven patents asserted by Signify in this case. The '328, '604, and '929 patents are related to the mechanical design of LED lighting fixtures. The other four patents—the '399, '138, '554, and '525 patents—are related to the electronic circuits that deliver power to the LEDs.

According to Signify, most of Satco's LED products infringe the '399 and '138 patents: 2079 different products are accused. The number of accused products is smaller for the other patents. For the '328, '604, and '929 patents there are 210, 226, and 183 accused products, respectively. For the '554 and '525 patents, there are 240 and 131 accused products, respectively.

This brief is ordered to group the "mechanical" patents together first, and the "circuit" patents second. Additionally, because the '399 and '138 patents share the same specification and have similar claims, both parties have discussed those patents together.

II. LEGAL STANDARD

The purpose of claim construction is to determine the meaning and scope of the patent claims asserted to be infringed. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 976 (Fed. Cir. 1995) (*en banc*), *aff'd* 517 U.S. 370 (1996). While most questions of infringement and validity are resolved by the jury, claim construction is a question of law. *Id.* When the parties raise an actual dispute regarding claim scope, the court, not the jury, must resolve that dispute. *O2 Micro Int'l Ltd. v. Beyond Innovation Tech. Co.*, 521 F.3d 1351, 1360 (Fed. Cir. 2008). However, only the claim terms in controversy need to be construed, and then "only to the extent necessary to resolve the controversy." *Vivid Techs., Inc. v. Am. Sci.*, 200 F.3d 795, 803 (Fed. Cir. 2000).

While "courts maintain discretion over claim construction procedure, the law surrounding claim construction is well-settled." *Am. Technical Ceramics Corp. v. Presidio Components, Inc.*, 2016 WL 6583637, at *2 (E.D.N.Y. Nov. 7, 2016). "Courts must construe patent claims 'objectively' by seeking to accord a claim the meaning it would have to a 'person of ordinary skill

in the art at the time of the invention.'" *Id.* (citing *Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1116 (Fed. Cir. 2004).) "In doing so, a court considers three primary sources within the intrinsic evidence of record: (i) the language of the claims, (ii) the specification, and (iii) the prosecution history." *Id.* In addition, the Court may also consider extrinsic evidence. *Id.*

First, the Court "looks to the words of the claims themselves, both asserted and nonasserted, to define the scope of the patented invention." *Id.* "In general, the language of a claim is given its ordinary and customary meaning unless a distinct definition is employed in the specification or prosecution history." *Id.* "The ordinary and customary meaning of a claim term is that which one of 'skill in the art at the time of the invention' would understand." *Id.*

"Next, the court looks to a patent's specification." *Id.* at *3. The patent specification includes the (1) "Abstract" of the invention; (2) "Summary of the Invention;" (3) patent drawings, if any; and (4) "Detailed Description." 37 C.F.R. §§ 1.71-1.74. "[T]he specification 'is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term.'" *Phillips v. AWH Corp.*, 415 F.3d 1303, 1315 (Fed. Cir. 2005) (en banc) (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)). In addition, "[t]he specification may assist in the court's determination of whether the inventor intentionally used any terms in the claims in a manner inconsistent with their ordinary meaning; however, this intention must be clear." *Presidio*, 2016 WL 6583637 at *3.

Third, the Court "should also consider the patent's prosecution history." *Markman*, 52 F.3d at 980. "A patent's prosecution history contains a complete record of all the proceedings before the United States Patent and Trademark Office ('USPTO'), including any express representations made by the applicant regarding the scope of the claims. As such, the prosecution history provides

evidence of how the USPTO and the inventor understood the patent, and the record before the USPTO can be of critical significance in determining the meaning of the claims." *Presidio*, 2016 WL 6583637 at *3.

Finally, the Court may consider extrinsic evidence, "which includes expert and inventor testimony, dictionaries, and learned treatises, [that] may 'aid the court in coming to a correct conclusion' as to the 'true meaning of the language employed' in the patent." *AIA Eng'g Ltd., v. Magotteaux Int'l S/A*, 657 F.3d 1264, 1273 (Fed. Cir. 2011) (quoting *Markman*, 52 F.3d at 980). However, extrinsic evidence is "less significant than the intrinsic record in determining the legally operative meaning of disputed claim language." *C.R. Bard, Inc. v. U.S. Surgical Corp.*, 388 F.3d 858, 862 (Fed. Cir. 2004) (internal quotations and citation omitted).

III. CONSTRUCTION OF THE DISPUTED TERMS

A. U.S. Patent No. 8,070,328

The '328 patent describes a downlight LED lamping system which purports to provide "a clear cutoff with minimal glare." ('328 patent, 1:49-51.) Specifically, the LED downlight fixture of the alleged invention includes "an array of LEDs in thermal connectivity with a heatsink" (*id*. at 1:58-59), the heatsink "allow[ing] maximum heat reduction and increased life for the LEDs." (*Id*. at 6:1-3.) The array of LEDs is "positioned adjacent a first aperture of a multi-piece reflector assembly, the multi-piece reflector assembly including a first reflector having the first aperture disposed in an upper portion of the first reflector and an opposed larger second aperture in a lower portion of the first reflector, and a second reflector having a first aperture positioned adjacent the second aperture of the first reflector and a second aperture opposite the first aperture of the second reflector and defining a light exit passageway." (*Id*. at 1:59-67.) A diffuser is "positioned proximal to and extending across the second aperture of the first reflector and the first aperture of the second reflector." (*Id*. at 2:1-3.)

1. "heatsink / heat sink" (claims 1, 2, 10, 16, 19)

Signify's Proposed Construction	Satco's Proposed Construction
Plain and ordinary meaning.	A heat-conductive device that dissipates unwanted heat and reduces heat in the LED downlight fixture.

Satco's construction is consistent with the term's plain and ordinary meaning as well as the intrinsic evidence. On the other hand, Signify asks the Court not to construe the term at all but to instead give it its "plain and ordinary meaning." As discussed below, the Court should construe the term to adjudicate potential disputes and inform the jury. *See O2 Micro*, 521 F.3d at 1361-62.

Claim 1 recites "an array of LEDs in thermal connectivity with a heatsink." While it is true that "heat sink" is a term of art whose meaning is well-understood by a POSITA, it is important in this case to specify that meaning. This is because the parties disagree about the term's meaning and Signify's proposed meaning may enable it to ask the jury to find that certain components of the accused products are heat sinks when they are not.

Heatsinks are understood in the art to be "devices that enhance heat dissipation from a hot surface, usually the case of a heat generating component, to a cooler ambient, usually air." (Curran Decl. ¶ 60 (citing "How to Select a Heat Sink," Seri Lee, Electronics Cooling, June 1995, at 2).) "Heat sinks must prevent overheating in electronic devices and components. To do this, they must be made of certain materials, which have a good degree of thermal conductivity." (*Id*. (citing "What Makes a Good Heat Sink?" Simon Dalley, Elmelin Ltd., June 2019, at 1).) "Essentially, the heat sink acts as a pathway for any heat being generated to dissipate away from the device or component." (*Id*.) "With rare exceptions, heat sinks are made of a thermally conductive metal, the most common being Aluminum." (*Id.* (citing "Heat Sink Fabrications Guide," Aavid Thermal Division of Boyd, September 2020, at 1).) The most effective heat sink "has fins in its design that provide the necessary surface area to dissipate the heat." (*Id*. (citing "What Makes a Good Heat

Sink?" Simon Dalley, Elmelin Ltd., June 2019, at 1).) Thus, in the context of the LED downlight fixture of claim 1 of the '328 patent, a heat sink is a heat-conductive device that dissipates unwanted heat and reduces heat in the LED downlight fixture.

The specification uses the term consistently with this meaning:

> The positioning of the heatsink 30 allows maximum ***heat reduction*** and increased life for the LEDs 84. The heatsink 30 includes a substantially circular mounting plate 34 and a plurality of heatsink fins 32 extending from the mounting plate 34. The circular mounting plate is sized in general to be similar in size to the upper aperture 56 of the first reflector 52. The fins 32 depend from the mounting plate 34 about the periphery of the upper aperture 56 of the first reflector 52. The heatsink 30 may be formed of various materials ***which are heat conductive***.

(Curran Decl. ¶ 57) ('328 patent, 6:1-10 (emphasis added).) Accordingly, Satco's construction should be adopted.

Signify contends that "heat sink" should be given its plain meaning but that if the Court finds it necessary to construe the term, the construction should be "an element that draws heat away from the LED and transfers it to the surrounding environment." (Op. Br. at 6.) There are several problems with this construction.

First, Signify's construction fails to specify the material of the heat sink. As discussed above, heat sinks must be made of certain materials which have a good degree of thermal conductivity. (Curran Decl. ¶¶ 60, 62.) Thus, they are almost always made of a thermally conductive metal. (*Id*.) Indeed, Signify's own expert stated during his deposition that "the material of the heatsink has to be conductive." (Ex. A at 92:18 to 93:5) ("A. . . . the material of the heatsink has to be conductive, if it were not conductive it could not be a heatsink.") However, Signify's construction, while specifying that the heat sink "draws heat away from the LED," omits any reference to the material of the heatsink. In doing so, the term as defined by Signify is broad enough to cover a person's hand when that person picks up a cup of hot coffee, since the hand would draw heat away from the cup and transfer it to the hand. (Curran Decl. ¶ 62.) However, a POSITA would

clearly not consider one's hand to be a heat sink. (*Id*.) It is therefore necessary to include in the construction of heat sink that it be a heat-conductive device.

Second, Signify's construction does not specify the sole purpose of the heat sink, which is to reduce heat in the LED downlight fixture. (Curran Decl. ¶ 63.) According to Signify's construction, the heat sink need only transfer heat from the LEDs "to the surrounding environment." However, the "surrounding environment" of the LEDs within the overall downlight fixture includes the other components within the fixture. (*Id*.) For example, in some LED downlight fixtures, the LEDs are mounted on an FR4 printed circuit board which has a copper substrate on the back or, alternatively, on the circuit side of a metal core printed circuit board which is formed from a thin plate of aluminum. (*Id*.) Then, the printed circuit board might be coupled to a heat sink. (*Id*.) In such a downlight fixture, heat generated by the LEDs is transferred from the LEDs to the copper or aluminum of the printed circuit board and then from the copper or aluminum to the heat sink. (*Id*.) The heat sink then transfers the heat to the exterior of the downlight fixture to thereby reduce the heat in the fixture. (*Id*.) Under Signify's proposed construction, however, the copper or aluminum would be considered heat sinks. (*Id*.) But such elements are ***not*** heat sinks—they are merely conduits to transfer the heat generated at the LEDs to the actual heat sink. (*Id*.) Without transferring the heat generated by the LEDs outside the downlight fixture, the heat will remain in the fixture and the overheating problems which heat sinks were designed to alleviate would remain. (*Id*.)

Accordingly, in the context of the '328 patent, a POSITA would understand "heat sink" to mean "a heat-conductive device that dissipates unwanted heat and reduces heat in the LED downlight fixture." Providing a construction for this term is important in this case since leaving it open to interpretation as Signify proposes would permit Signify to call components within the

accused products heat sinks, when they are not. Satco respectfully submits that the Court should resolve this potential dispute now and not leave it up to the jury.

2. "preselected spaced distance" (claim 19)

Signify's Proposed Construction	Satco's Proposed Construction
Plain and ordinary meaning.	Distance chosen in advance to achieve optimal cut-off, reduced glare and increased light efficiency.

Claim 19 recites "a diffuser positioned a preselected spaced distance from said LED array." Thus, for the public to be informed about the scope of this claim, it must understand how to "preselect" the distance between the diffuser and the LED array. (Curran Decl. ¶ 66.) Otherwise, the scope of the claim is left ambiguous and the Court has failed to satisfy its obligation to "assign a fixed, unambiguous, [and] legally operative meaning to the claim" *Liquid Dynamics Corp. v. Vaughan Co., Inc.*, 355 F.3d 1361, 1367 (Fed. Cir. 2004) (citing *Vitronics*, 90 F.3d at 1582).

Signify apparently disagrees, taking the position that the term should be given its "plain and ordinary meaning," which would permit the diffuser to be positioned *any* distance from the LED array and still be covered by the claim. However, such a construction would not only render the claim ambiguous, it would render the phrase "preselected spaced distance" superfluous. *See Presidio*, 2016 WL 6583637 at *5 ("A claim construction that renders claim language superfluous is almost always incorrect.") (citation omitted). This is because the diffuser *must* be positioned *some* distance from the LED array. On the other hand, Satco's construction which, as discussed below, is consistent with the specification, informs a POSITA how to "preselect" the spaced distance between the diffuser and the LED array, namely, to achieve optimal cut-off, reduced glare and increased light efficiency.

The plain meaning of "preselect" is "to choose in advance usually on the basis of a particular criterion" (*see* Merriam-Webster's Collegiate Dictionary (11th ed. 2006) at 982). In

addition, the specification makes clear that the spaced distance between the diffuser and the LED array is chosen to achieve optimal cut-off, reduced glare and increased light efficiency. (*See* '328 patent, 1:49-51 ("Accordingly, it would be desirable to form a downlight having the advantages of an LED lamping system and which also has the advantages of a ***clear cutoff with minimal glare***"); 4:1-3 ("The LED and diffuser positioned within the reflector assembly provide ***ample light cut-off, reduced glare and increased light efficiency***"); 5:61-62 ("In either embodiment, the diffuser 74 is positioned within the reflector assembly 50 for ***optimal cut-off and reduced glare***").)

Signify concedes that the specification states that "the diffuser is positioned within the reflector assembly for optimal cut-off and reduced glare." (Op. Br. at 9.) However, Signify takes issue with the inclusion of "increased light efficiency" in Satco's construction, because that allegedly "is always associated [in the specification] with the LEDs, not the diffuser." (*Id.*) But the statement in the specification on which Signify relies says just the opposite: "The LED and diffuser positioned within the reflector assembly provide ample light cut-off, reduced glare and increased light efficiency." ('328 patent, 4:1-3.) A POSITA would understand this to mean that the LED and diffuser are positioned, ***relative to one another***, to provide ample light cut-off, reduced glare and increased light efficiency. (Curran Decl. ¶ 70.)

Lastly, Satco's construction does not improperly require that limitations be imported from the specification as Signify claims. (Op. Br. at 9.) Rather, Satco's construction is consistent with what the inventors purport to have invented (see, e.g., *Phillips*, 415 F.3d at 1316 ("the inventor's intention, as expressed in the specification, is regarded as dispositive")) and is necessary to eliminate ambiguity, provide the phrase with a meaning, and inform the public about the claim's scope. Accordingly, Satco's construction should be adopted.

3. "one of above a lowermost edge reflector or beneath said lowermost edge of said reflector" (claim 19)

Signify's Proposed Construction	Satco's Proposed Construction
Plain and ordinary meaning.	Indefinite.

This phrase is nonsensical and, therefore, claim 19 is indefinite. *See Process Control Corp. v. HydReclaim Corp*., 190 F.3d 1350, 1357 (Fed. Cir. 1999) ("where . . . claims are susceptible to only one reasonable interpretation and that interpretation results in a nonsensical construction of the claim as a whole, the claim must be invalidated"); *Trustees of Columbia Univ. in City of New York v. Symantec Corp.*, 811 F.3d 1359, 1367 (Fed. Cir. 2016) ("The claims are nonsensical in the way a claim to extracting orange juice from apples would be, and are thus indefinite.").

Claim 19 recites that that the diffuser is positioned "one of above a lowermost edge reflector or beneath said lowermost edge of said reflector." However, there is no mention in the claims or the specification of an "edge reflector," a "lowermost edge reflector" or a "lowermost edge" of any reflector. (Curran Decl. ¶ 73.) Indeed, Signify's expert admitted during his deposition that he has never heard of a "lowermost edge reflector." (Ex. A at 97:9-13) ("Q. Have you ever heard of a lowermost edge reflector? A. I don't have a recollection of that. If I went to the store to buy a lowermost edge reflector I don't think that the clerk would offer one up."). In short, it is impossible to understand the meaning of this limitation and, therefore, claim 19 is indefinite. (Curran Decl. ¶ 74.)

Signify argues that the phrase is not indefinite and, once again, that it should be construed to have its "plain and ordinary meaning." But that is not what Signify is really arguing, because it cannot be disputed that the plain words of the claim lack clarity. (Curran Decl. ¶ 77.) Instead, by arguing under the guise of "plain meaning" that the phrase means "that a diffuser [is] positioned *either* above, the lowermost edge of a reflector, or beneath the lowermost edge of a reflector" (Op. Br. at 10), what Signify is really arguing is that the Court should ***first*** correct the error in the claim

and rewrite it to say: "one of above a lowermost edge of a reflector or beneath said lowermost edge of said reflector" (i.e., inserting "of a" into the claim after the first "lowermost edge") and then, ***second***, construe the rewritten claim to mean "that a diffuser [is] positioned *either* above, the lowermost edge of a reflector, *or* beneath the lowermost edge of a reflector." Each of Signify's arguments should be rejected.

Signify has failed to satisfy the "nearly impossible" burden to support the judicial correction of an error in a patent. *LG Elecs., Inc. v. Quanta Computer Inc.*, 566 F. Supp. 2d 910, 913 (W.D. Wis. 2008) (noting the "nearly impossible standard for judicial correction of a patent") (citing *Novo Indus., L.P. v. Micro Molds Corp.*, 350 F.3d 1348, 1357 (Fed. Cir. 2003)). Judicial correction of an error in a patent may be available "if (1) the correction is not subject to reasonable debate based on consideration of the claim language and the specification and (2) the prosecution history does not suggest a different interpretation of the claims." *Novo Indus.*, 350 F.3d at 1354. Here, the correction proposed by Signify is subject to reasonable debate because (a) it excludes the preferred (and indeed all) embodiments of the invention and (b) the correction proposed by Signify is not the only possible correction.

Signify argues that the phrase as corrected means that "a diffuser [is] positioned ***either*** above, the lowermost edge of a reflector, ***or*** beneath the lowermost edge of a reflector." (Op. Br. at 10.) In other words, under Signify's construction, the diffuser cannot be positioned ***both*** above and beneath the lowermost edge of the reflector. However, in ***all*** the preferred embodiments shown in the Figures of the '328 patent, the diffuser 74 is positioned both above and beneath the lowermost edge of reflector 52. This is illustrated in Fig. 6 below (annotated by Satco), where a portion of diffuser 74 (shown in green) extends above the lowermost edge of reflector 52, and a portion (shown in red) extends beneath the lowermost edge:

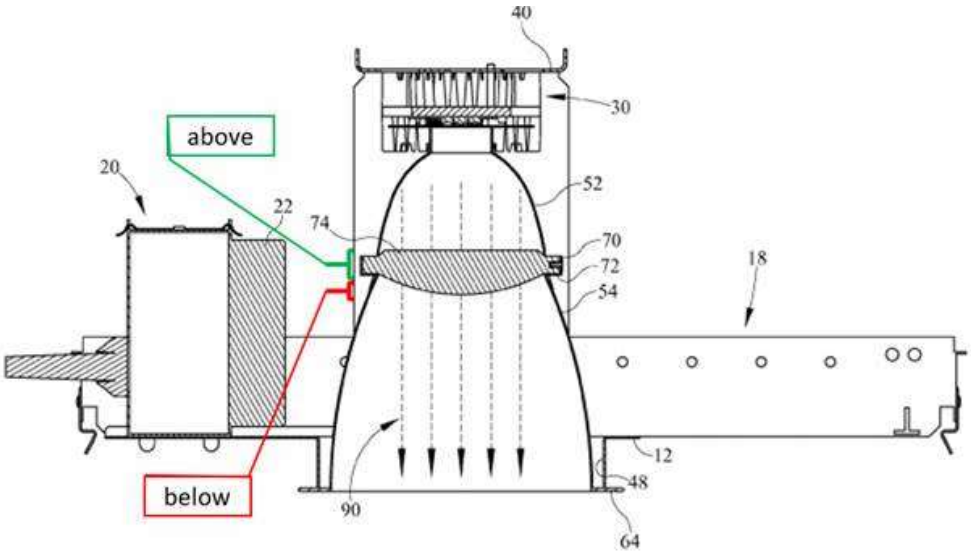


FIG. 6

Therefore, the correction proposed by Signify would cause the construction of this phrase to read out the preferred embodiments of the invention, which the Federal Circuit has said is "rarely, if ever, correct." *Vitronics*, 90 F.3d at 1583 (holding that a claim construction that excludes the preferred embodiment is "rarely, if ever, correct and would require highly persuasive evidentiary support").

In addition, the correction proposed by Signify is not the only possible correction. For example, because every embodiment disclosed in the '328 specification and Figures includes two reflectors, i.e., a reflector assembly, and because the diffuser is almost always disposed between the two reflectors, the claim could just as easily be rewritten as follows:

> 19. An LED downlight fixture, comprising: an LED array formed of a plurality of LEDs, said LED array positioned in thermal communication with a heat sink; a reflector having an upper opening and a lower opening, said LED array disposed adjacent said upper opening; a diffuser positioned a preselected spaced distance from said LED array; said diffuser positioned ~~one of~~ above a second reflector and ~~lowermost edge reflector or~~ beneath a ~~said~~ lowermost edge of said reflector; and, a lens disposed between said LED array and an uppermost edge of said reflector.

In addition, even plaintiff's own expert disagrees with Signify's proposed correction of this phrase. When asked during his deposition about the positioning of the diffuser ***both*** above and

below the lower edge of the reflector as shown in Fig. 6 of the patent (above), Mr. Gershowitz first agreed, as he must, that that is the case. (Ex. A at 104:13 to 105:3) ("THE WITNESS: The diffuser as illustrated in Figure 6 has thickness and geometry that allows the mounting of the diffuser at the lower edge to have elements of the diffuser that are above the lower edge and below the lower edge because the diffuser has physical thickness as all real word objects have, so therefore from a standpoint of placement, the placement is at the edge. From a standpoint of looking at the cross-section there are elements of the diffuser that are present above the edge and below the edge."). Then, in an attempt to address this fatal problem with Signify's construction, Mr. Gershowitz changed his proposed correction of the phrase to require that the so-called "mounting location of the diffuser," or the location "where the diffuser is interfacing with the reflector" must either be below or above the lowermost edge of the reflector. (Ex. A at 105:4 to 106:12). In other words, Mr. Gershowitz proposed that the claim be corrected to state: "said diffuser having a mounting location ~~positioned~~ one of above a lowermost edge of the reflector or beneath said lowermost edge of said reflector." Thus, Mr. Gershowitz has presented yet another possible correction for this phrase.

Thus, because the claim is susceptible to more than one possible correction, the Court should decline to correct the claim as proposed by Signify for this reason as well. *See Novo Indus.*, 350 F.3d at 1357-58 (refusing to correct 'a' to 'and' because other possibilities for correction existed).

For these reasons, the Court should decline to correct the claim as Signify proposes and find that the phrase "one of above a lowermost edge reflector or beneath said lowermost edge of said reflector" is indefinite and the claim invalid.

4. "engaging" (claim 5)

Signify's Proposed Construction	Satco's Proposed Construction
Plain and ordinary meaning.	Originally: interlocked with. Withdrawn

B. U.S. Patent No. 7,348,604

The '604 patent describes a light-emitting module "that allows building a solution with simpler more generic modular elements." ('604 patent, 1:35-37.) Specifically, the light-emitting module of the purported invention includes (a) "a thermally conductive substrate having one or more light-emitting elements thermally connected thereto;" (b) "a heat dissipation element thermally coupled to the thermally conductive substrate; and (c) "a housing element including fastening means [i.e., tabs] for detachably coupling the housing element to the heat dissipation element, [the] substrate being enclosed between the heat dissipation element and [the] housing element." (*Id*. at 2:65-3:10.) In addition, the housing element includes "a transparent region enabling transmission of light emitted by the one or more light-emitting elements therethrough." (*Id*. at 3:10-12.)

Signify states in its brief that "[p]rior to the '604 Patent, light emitting modules lacked mechanisms for dissipating heat . . . mechanisms for protecting LEDs from the environment . . . [and] optical elements." (Op. Br. at 38.) Signify is wrong. First, the portions of the specification to which Signify cites to support these statements say nothing of the sort. Instead, those portions state only that certain specific prior art references do not include these features. Second, mechanisms for dissipating heat, mechanisms for protecting LEDs from the environment, and optical elements were certainly known prior to the alleged invention of the '604 patent. (Curran Decl. ¶ 25.) For example, Tektite Aluminum Flashlights, including the Expedition 1900, that were sold and on-sale in the United States in 2003 and earlier, disclosed all of these features. (*Id*.) And,

during his deposition, Signify's expert confirmed that light emitting modules in existence prior to the '604 patent included these features. (Ex. A at 147:1 to 148:10). In fact, he admitted that they were around "for centuries." (*Id.*)

1. "fastening means" (claim 1) / "fastening means for detachably coupling the housing element to the heat dissipation element" [2] (claim 1)

Signify's Proposed Construction	Satco's Proposed Construction
Function: detachably coupling the housing element to the heat dissipation element. Structures: (i) fastening means 450 as described in Figure 4 and at, and 7:42-51; (ii) mechanical fasteners for example, screws, bolts, rivets or the like; magnetic mounting systems; adhesives for example, pressure sensitive tape, glue or epoxy or the like as described at 5:18-24, 6:43-45, 7:25-26, 7:55-67; and (iii) equivalents thereof.	Function: detachably coupling the housing element to the heat dissipation element. Structure: The tabs 450 shown in Fig. 4 and described in col. 7:42-51, and their structural equivalents.

The parties agree that this term is a means-plus-function term. The parties also agree that the function of the claimed "fastening means" is "detachably coupling the housing element to the heat dissipating element." Thus, the only dispute regarding this claim term is over the structure for performing the claimed function.

The parties agree that the specification discloses as corresponding structure for the claimed "fastening means" the tabs 450 shown in Fig. 4 and described in col. 7:42-51. However, Signify also identifies the "mechanical fasteners for example, screws, bolts rivets or the like; magnetic mounting systems; adhesives for example, pressure sensitive tape, glue or epoxy or the like" disclosed in the specification at col. 5:18-24. These additional "structures" proposed by Signify should be rejected for several reasons.

[2] Signify proposes that the proper term for construction is "fastening means" not "fastening means for detachably coupling the housing element to the heat dissipation element.

"Structure disclosed in the specification qualifies as 'corresponding structure' [only] if the intrinsic evidence clearly links or associates that structure to the function recited in the claim." *Diebold Nixdorf, Inc. v. Int'l Trade Comm'n*, 899 F.3d 1291, 1303 (Fed. Cir. 2018) (quoting *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1352 (Fed. Cir. 2015) (en banc)). This requires an express "indication" in the specification or prosecution history that the structure corresponds to the claimed function. *B. Braun Med., Inc. v. Abbott Labs.*, 124 F.3d 1419, 1425 (Fed. Cir. 1997) ("Although Fig. 3 of the patent shows a valve seat, neither the specification nor the prosecution history contains any indication that the valve seat structure corresponds to the recited function, i.e., that it holds the flexible disc against the triangular member so as to restrain sideways movement."). In addition, "[e]ven if the specification discloses corresponding structure, the disclosure must be of 'adequate' corresponding structure to achieve the claimed function." *Id*. (citation omitted). The additional structure proposed by Signify fails to satisfy both requirements.

First, none of Signify's additional structures are clearly linked or associated to the function of "detachably coupling the housing element to the heat dissipating element." (Curran Decl. ¶ 43.) There is no disclosure anywhere in the specification that these additional structures are used to perform that function. *See B. Braun*, 124 F.3d at 1424 ("More specifically, we must search for the structure that holds the flexible disc 50 firmly against the triangular member 40 in a manner that restrains sideways movement."). As discussed above, the additional structures proposed by Signify are taken from the specification at col. 5:18-24. However, a complete reading of that section demonstrates that the "fastening means" mentioned there is a different fastening means than what is claimed, and is used to perform an entirely different function. (Curran Decl. ¶ 43.) Specifically, the sentences preceding the specification portion cited by Signify state:

> In one embodiment, the light-emitting modules are mechanically mounted to various receiving means or mounting systems such as a track, or similar structure

> as would be readily understood. Where the light-emitting modules are mounted on a track, for example, the track may be attached to various structures such as the inside back wall of a canopy, or any other surface as would be readily understood. Alternatively, the light emitting modules can be mounted at desired locations by fastening means.

('604 patent, 5:11-19.) Thus, the "fastening means" mentioned above, which is for mounting the light-emitting modules to mounting systems such as a track, is not the same fastening means recited in the claim which is for "detachably coupling the housing to the heat dissipation element." (Curran Decl. ¶ 43.) Indeed, that portion of the specification ***makes no mention at all of the housing or the heat dissipation element***. (*Id.* at ¶ 44.) And, during his deposition, Signify's own expert admitted that the specification of the '604 patent does not include any indication that the additional structures are used to attach the housing to the heat dissipation element. (Ex. A at 173:4-10) ("THE WITNESS: So again I state that the patent does not provide an embodiment which uses the other means of screws and bolts and adhesives and rivets and the like. It does not provide any specific embodiment which is using those methods for attaching the housing element to the -- to the dissipation element.").

Thus, the additional structures proposed by Signify are not "clearly linked or associated" to the function of "detachably coupling the housing element to the heat dissipating element" and must be rejected. This should be the end of the inquiry.[3]

Second, even if those additional structures were linked to the claimed function of "detachably coupling the housing element to the heat dissipating element"—they are not—they do not *achieve* that function. (Curran Decl. ¶ 46.) Specifically, they do not achieve the function of "detachably" coupling. As stated in the specification with regard to the *claimed* fastening means:

[3] Signify is also wrong that the patentee "defined" the claim term in the specification. (Op. Br. at 41.) While patentee used the term "fastening means" in the specification in connection with a discussion of the additional structures, as discussed above, those fastening means are different from the claimed fastening means.

> [T]he housing may be made of a flexible material which has a degree of flexibility such that under a controlled applied mechanical force, the housing assumes a strained shape and its fastening means 450 [i.e., the tabs] can assume a position which enables the housing to be slid over the heat dissipation element 300. Upon removal of the force the housing element can assume its unstrained shape, thereby causing the fastening elements [i.e., the tabs 450] to clutch the heat dissipation element and secure a ***releasable*** connection between the housing element and the heat dissipation element.

('604 patent, 7:42-51.) Thus, for a structure to achieve the claimed function, that structure must secure a "releasable" connection between the housing and the heat dissipation elements.

In addition, during prosecution of a related patent application before the European Patent Office, it was argued by the applicant that the invention "differs from the closest prior art, e.g., in that the housing element includes fastening means for detachably coupling the housing element to the heat dissipation element" and that "[t]he technical effect resulting from this technical feature is that the present invention provides a secure ***and convenient*** connection between the housing element and the heat dissipation element." (Curran Decl. ¶ 47 (citing Ex. C at 2).) *See, e.g.*, *Apple Inc. v. Motorola, Inc.*, 757 F.3d 1286, 1312 (Fed. Cir. 2014) (statements made before a foreign patent office that are relevant and not related to unique aspects of foreign patent law may be considered when construing claims). Similarly, during prosecution of a related application before the Canadian Patent Office, the applicant argued that the claimed "fastening means" also provided a "secure ***and convenient*** connection . . . due to the fact that the fastening means are included in the housing element, ***and there is no need of auxiliary fastening means***." (Curran Decl. ¶ 47 (citing Ex. D at 3).)

However, the additional structures proposed by Signify would not achieve those functions—a releasable and convenient connection. (Curran Decl. ¶¶ 48-50.) In addition, many of the additional structures—such as the screws, bolts or the like—are auxiliary (*id*.) and, therefore, adopting them as structures for performing the function of "detachably coupling" would not only

violate basic canons of claim construction, but would contradict express statements made by the applicants to secure their patents.[4]

Signify relies on the declaration of its expert, Mr. Gershowitz, in which he states, without providing any basis, that mechanical fasteners like screws, bolts, or the like, and magnetic mounting systems are "intrinsically detachable." (Gershowitz Decl. ¶ 79.) In addition, according to Mr. Gershowitz, rivets are detachable because "it is possible to remove the rivets via mechanical means and leave intact the base components which they attach," and "pressure sensitive tape, glue, or epoxy could also be used to detachably couple the housing element to the heat dissipating element" since they could be used to do so "without damaging either element." (*Id*. at ¶¶ 79, 80.) These statements by Mr. Gershowitz, however, do not demonstrate that the additional structures identified by Signify can be used to accomplish the claimed function. (Curran Decl. ¶¶ 50, 51.) Neither screws, bolts, rivets, tape, glue nor epoxy accomplish the goal of a releasable and convenient connection. (*Id.* at ¶ 51.) Indeed, the *Cleavable Epoxy Resins: Design for Disassembly of a Thermoset* publication mentioned in Mr. Gershowitz's declaration discusses the need to apply acid to remove the components attached using epoxy in order to facilitate recycling of the components held together using epoxy—which hardly constitutes a releasable and convenient connection. (*Id.*) Similarly, that it may be "possible to remove . . . rivets via mechanical means and leave intact the base components which they attached" also does not constitute a releasable and convenient means for attachment. (*Id.* at ¶ 47.) In short, none of these additional structures provides

[4] Signify argues in its brief that "a POSITA would understand that all of these [additional] structures could be used to detachably couple the housing element to the heat dissipating element." (Op. Br. at 41.) It is notable that Signify states only that these structures "could be" used to perform the claimed function—and not that the specification states that they can. This makes clear the failure of the specification to link these structures to the claimed function.

a detachable connection between the housing and the heat dissipation element, which is likely why the specification does not disclose that they do. (*Id.* at ¶ ¶ 47, 48.)

Signify also cites to the specification at col. 7, lines 55-67 to support its position that the claimed "fastening means" can also include "a sealant such as glue or epoxy." (Op. Br. at 41.) However, Signify is once again pointing to structure which is not in any way connected to the claimed function of detachably coupling the housing to the heat dissipating element. (Curran Decl. ¶ 52.) Rather, the glue or epoxy mentioned in that portion of the specification is for performing the function of sealing the cavity between the housing element and the heat dissipation element from environmental conditions. ('604 patent, 7:62-67) ("Furthermore, this kind of attachment mechanism can be employed, for example, to press a sealing means such as glue or epoxy, for example, between the housing element and heat dissipation element, ***such that when assembled the cavity between the housing element and the heat dissipation element is sealed from environmental conditions***.").) And, once again, Signify's expert admitted that nowhere in the '604 patent is there any disclosure of the sealing means being used to attach the housing to the heat dissipation element. (Ex. A at 183:10-20) ("A. As I believe I have already stated, I do not believe that anywhere in '604 there is such an embodiment explicitly described, nor is there any such embodiment explicitly excluded."). Indeed, dependent claim 12, on which Signify attempts to rely to support its position (*see* Op. Br. at 42), calls the glue or epoxy "a ***sealant*** substance" and expressly states that it is "positioned between the housing element and the heat dissipation element ***for environmental sealing***." Signify is grasping at straws.

Finally, Signify's argument that Satco's proposal renders dependent claim 11 superfluous should be rejected. Claim 11 states "[t]he light-emitting module according to claim 1, wherein the housing element is formed from flexible material for releasably connecting to the heat dissipation

element." According to Signify, "[if] the Court accepts Satco's proposed structure, then claim 11 is meaningless as independent claim 1 would already require a fastening means 450 formed of a flexible material for releasably connecting to the heat dissipation element." (Op. Br. at 42.) But this argument is fundamentally flawed, since the fastening means 450 of claim 1 are the tabs 450 that cooperate with the housing, while claim 11 specifies that the housing—not the fastening means—is formed from flexible material. Thus, neither of the cases cited by Signify are relevant.

C. U.S. Patent No. 7,358,929

The '929 patent describes "tile lighting methods and systems." ('929 patent, title.) While the '929 patent discloses many embodiments of tile lighting methods and systems, the asserted claims relate to a particular embodiment of a tile light (and method of providing a tile light) with a diffuser that is lit by LED lighting units disposed about a perimeter of the tile light's rectangular housing. ('929 patent, claims 17, 19, 23-24, 59, 61, 63; '929 patent at 3:33-52, 35:20-36:47.) The '929 patent explains that, "[t]o reduce the number of light emitting elements required for a tile 500, boards with LEDs can be mounted as a lighting unit 100 or light source 1502 on the edges facing in towards the center of the shape . . ." ('929 patent, 35:20-23.)

1. "diffuser disposed <u>over the housing</u>" (claim 17)

Signify's Proposed Construction	Satco's Proposed Construction
Plain and ordinary meaning.	Diffuser is placed on top of the housing/enclosure.

Satco's proposed construction gives meaning to the phrase "over the housing," and is supported by the intrinsic evidence. On the other hand, Signify proposes that the phrase not be construed at all, which it hopes will enable it to argue that a diffuser placed ***within*** the housing is covered by the claims. Signify's attempt to expand the scope of the claim in this manner should be rejected. *Comark Comm's v. Harris Corp.*, 156 F.3d 1182, 1186 (Fed. Cir. 1998) ("Proper claim construction requires an examination of the claim language, the written description, and, if

relevant, the prosecution history. The appropriate starting point, however, is always with the language of the asserted claim itself.")

The plain language of the claims supports Satco's construction. Initially, the fact that claim 17 specifies the location of the diffuser ("over the housing"), while other claims do not (s*ee* '929 patent, claims 19, 63 ("a diffuser for diffusing light from the light units"); claim 59 ("a substantially translucent diffuser for diffusing light from the lighting units")), demonstrates that the phrase must be construed to have a meaning. Moreover, that claims 17 and 63 recite that the reflector is "interior to the housing" makes clear that the requirement that the diffuser be disposed "over the housing" in claim 17 means something different. Thus, the claims themselves dictate that this phrase be construed and that Signify's construction be rejected.

The specification also demonstrates that Satco's construction is correct. For example, the specification states that, in the embodiment of the asserted claims depicted in Figure 15, the diffuser is a "cover" that "is placed over the region in which the light sources are placed," ('929 patent, 35:26-45 (emphasis added); *see also* Fig. 15) which is the housing/enclosure. ('929 patent, 7:28-32.) (Curran Decl. ¶ 84.) Indeed, Signify confirms in its *Markman* brief that "Figure 15 depicts a tile and diffusing panel, wherein the diffusing panel 1512 covers the housing unit, within which the lighting sources 1502 are disposed at the edges." (Op. Br. at 46) (emphasis added.)

Accordingly, "diffuser disposed over the housing" must have a meaning, which is "diffuser is placed on top of the housing/enclosure" as Satco proposes.

2. "reflector interior to the housing for providing a consistent level of light output to different portions of the diffuser" (claims 19, 63)

Signify's Proposed Construction	Satco's Proposed Construction
Plain and ordinary meaning, or in the alternative a reflector interior to the housing for providing a homogenized light output to different portions of the diffuser.	Indefinite.

The central dispute here is whether "providing a consistent level of light output to different portions of the diffuser" provides "objective boundaries for those of skill in the art." *Interval Licensing LLC v. AOL Inc.*, 766 F.3d 1364, 1371 (Fed. Cir. 2014). Because the disputed phrase includes terms of degree—"consistent" and "different"—the claim "depends on the unpredictable vagaries of any one person's opinion" and, thus, "fails to provide sufficient notice of its scope." *Id*. (internal quotation omitted). The claim is therefore indefinite.

Neither the '929 patent claims nor specification provide any objective standard or parameters for determining what a "consistent level of light output" is, or how to determine whether the claimed reflector provides the same. (Curran Decl. ¶ 89.) (*See* '929 patent, 3:40-43, claims 19, 63.) Indeed, Signify's expert testified that this "could be highly subjective." (Ex. A at 213:25-215:14.)

Signify points to excerpts from the '929 patent specification that reference "uniform illumination" and "diffuse and homogenize light output." (Op. Br. at 47-48.) But these excerpts merely restate the vague phrase of the claim using different words, and do not explain how to determine whether those characteristics are achieved. Signify also relies on Mr. Gershowitz's citation to portions of the specification that relate to providing light to the diffuser via different shaped reflectors. (*Id.* (citing Gershowitz Decl. ¶¶ 86-92).) However, these portions disclose parameters for how to shape the reflector, not how to measure the amount of light provided to the diffuser by the reflector. (Curran Decl. ¶ 89.) Thus, it is left to the subjective opinion of the observer, which is insufficient for enabling a POSITA to understand the scope of the claim. *See Interval Licensing*, 766 F.3d at 1371.

In addition to failing to explain how to achieve the claimed "consistent level of light output to different portions of the diffuser," the claims and specification also fail to teach where the

"different portions of the diffuser" are located, or how they can be identified. (Curran Decl. ¶ 90.) (*See* '929 patent, 3:40-43, claims 19, 63.) Signify's expert stated during his deposition that "there's no need to have the portions in order to determine uniformity or no[t]," which does not provide any clarity regarding the claim scope. (Ex. A at 202:10-203:10.)

Signify's proposal of "plain and ordinary meaning" or an alternative construction that repeats most of the disputed phrase, including "different portions," also provides no clarity. Specifically, Signify's alternative construction just substitutes "homogenized" for "consistent level," without explaining how a POSITA would understand how to measure whether the light output is homogenized or consistent. Signify cites portions of the '929 patent specification and an expert declaration in support of its construction, but neither explains (a) how to determine what a "consistent level of light output" is, or (b) where "different portions of the diffuser may be." (*See* Op. Br. at 47-48; Gershowitz Decl. ¶¶ 86-92.) Indeed, Signify's proposed construction does not address the latter at all.

Because a POSITA cannot "understand the scope of the invention with reasonable certainty," the phrase should be found to be indefinite. (Op. Br. at 47 (citing *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120, 2124 (2014)).)

3. "disposed in an architectural environment" (proposed by Signify) (claim 23) / "an architectural environment" (proposed by Satco) (claim 23)

Signify's Proposed Construction	Satco's Proposed Construction
Mounted or integrated into walls, ceilings, doors, windows or floors.	Indefinite.

Claim 23 recites that "the tile light is disposed in an architectural environment." However, neither the claims nor the specification provides any guidance as to what an "architectural environment" is or how to determine whether the claimed tile light is "disposed in" the architectural environment. While the specification contrast does an "architectural environment" with "a building exterior," there is no explanation as to what an "architectural environment" is or

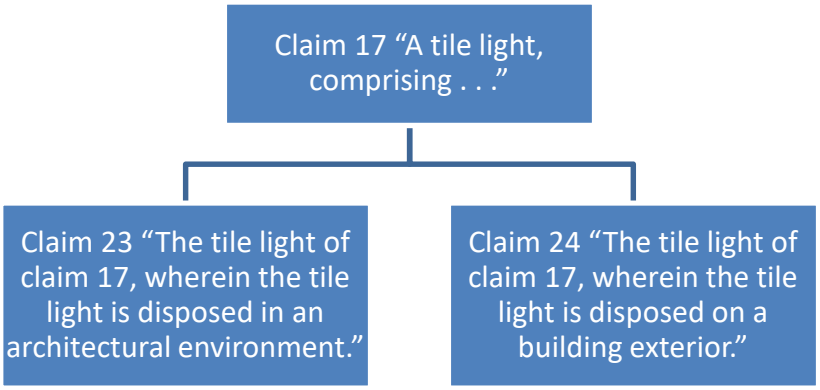
how one identifies an architectural environment. ('929 patent, 3:9-11, 3:29-32, 3:50-52, 4:2-4, 4:18-20, 4:36-38; *see also* claims 23-24; Curran Decl. ¶ 98.) Thus, the term is indefinite. *See HZNP Meds. LLC v. Actavis Labs. UT, Inc.*, 940 F.3d 680, 690-91 (Fed. Cir. 2019) (finding term indefinite where the meaning is not "reasonably clear" based on the language of the claims, specification, or extrinsic evidence).

Signify attempts to afford a meaning to this phrase, but its proposed construction cannot be correct because it is inconsistent with the specification. *See ERBE Elektromedizin GmbH v. Int'l Trade Comm'n*, 566 F.3d 1028, 1034 (Fed. Cir. 2009) ("We generally do not construe claim language to be inconsistent with the clear language of the specification; usually, it is dispositive.") (citations omitted); *see also Cartner v. Alamo Grp., Inc.*, 333 F. App'x 565, 568-69 (Fed. Cir. 2009) (reversing the district court's claim construction because, *inter alia*, it was "contrary to the '284 patent's specification"). Specifically, Signify contends that an architectural environment could include interior or exterior environments. However, as discussed above, the specification uses those terms in contrast to each other, without overlap. Signify points out that the specification refers to "walls, ceilings, doors, windows or floors," but none of these references relate to the term "architectural." (Op. Br. at 48-49; Ex. A at 234:17-24.) Indeed, in its *Markman* brief, the only quotation that Signify cites in support of its construction appears nowhere in the intrinsic or extrinsic evidence and Signify has no intrinsic support for its construction.[5] And, while it may be true that the specification refers to a building exterior and suggests that the tile light can be disposed in two different environments, an interior environment and an exterior environment, this

[5] Any attempt by Signify to substitute different support should not be permitted. *See Novartis Vaccines & Diagnostics, Inc. v. Regeneron Pharm.*, Inc., 2019 U.S. Dist. LEXIS 137522, at *27 n.6 (S.D.N.Y. Aug. 14, 2019) (in a *Markman* decision, finding that "[a]rguments presented for the first time in reply will not be considered.")

does not answer the question of what an "architectural environment" is, or why it could include a building exterior. (Gershowitz Decl. ¶ 95.) Indeed, Signify's expert testified that the portions of the '929 patent cited in his declaration do not reference "architectural," and he could not "recall the specific evidence" supporting Signify's construction. (Ex. A at 236:7-13.)

Claims 23 and 24 also do not support Signify's proposed construction as Signify contends. (*See* Op. Br. at 49 (citing Gershowitz Decl. ¶¶ 96-98).) Rather, these claims confirm that an "architectural environment" likely excludes a building exterior. Claims 23 and 24 both depend from claim 17, as shown below:



Importantly, claim 24 does not depend from claim 23 and, thus, claim 24 does not further limit claim 23, as Signify contends. (Op. Br. at 49 (citing Gershowitz Decl. ¶¶ 97-98).) Instead, these dependent claims demonstrate that the tile light can be disposed either in an architectural environment, or on a building exterior, which even Signify's expert could not dispute. (Ex. A at 230:9-232:19.)

Accordingly, the '929 patent specification provides no standard for evaluating whether the claimed tile light is in "an architectural environment," or what the characteristics and parameters of an "architectural environment" are. Thus, the term is indefinite. *See Nautilus*, 134 S. Ct. at 2124. Moreover, if anything, the specification and claims suggest that "disposed in an architectural environment" refers to a location in a building interior, rather than a building exterior and, thus,

"architectural environment" should not be construed to include a building exterior as Signify proposes.

4. "a geometric shape" (claim 61)

Signify's Proposed Construction	Satco's Proposed Construction
Plain and ordinary meaning.	Originally: A polygon (rectangle, triangle, etc.), not an irregular shape. Withdrawn

D. U.S. Patent Nos. 7,038,399 and 7,352,138

The '399 and '138 patents share the same specification. Satco agrees with Signify that the alleged inventions are intended to allow LED lights to operate based on the A.C. signal transmitted by a conventional TRIAC dimmer.[6] Signify asserts that its invention accomplishes this by using "a suitable controller" to convert that signal "into a D.C. signal suitable to drive an LED light source." (Op. Br. at 13.)

1. "controller"

Fundamentally the dispute between the parties is whether Signify is entitled to claim its alleged invention in broad functional terms. For example, Claim 1 of the '138 patent requires:

> An illumination apparatus, comprising:
> at least one LED; and
> at least one controller coupled to the at least one LED and configured to receive a power-related signal from an alternating current (A.C.) power source that provides signals other than a standard A.C. line voltage, the at least one controller further configured to provide power to the at least one LED based on the power-related signal.

In plain English, this claim purports to cover any "controller" that receives a standard AC dimmer signal and provides power to at least one LED from the dimmer signal. Appendix 1 contains similar

[6] *See* '399 patent, Abstract, 2:57-64 (stating in the "Summary" section that "the invention particularly facilitate[s] the use of LED-based light sources on A.C. power circuits that are controlled by conventional dimmers," which allows "convenient substitution of LED-based light sources in lighting environments employing A.C. dimming devices and conventional light sources.")

plain-English descriptions of each asserted independent claim, and shows that they fall into three groups: dimming, non-dimming, and agnostic (like claim 1 above). The dimming claims purport to cover any "controller" that receives an AC dimmer signal from a TRIAC dimmer[7] and controls the power provided to at least one LED from the dimmer signal in order to dim the LED in response. The non-dimming claims purport to cover any "controller" that receives an AC dimmer signal from a dimmer and controls the power provided to the LED from the dimmer signal so that it is "essentially non-varying" over a significant range of operation of the dimmer.

a) Purely functional claiming is prohibited.

"Controller" is a word that, in this context, is defined solely by its function. (Shackle Decl. at ¶¶ 31-40.) As Dr. Shackle explains, "the only limitation that the term "controller" imposes on the claim is a functional one—that it controls the electric power delivered to the LED(s)." (*Id.* at ¶ 38.) Since that functional requirement is separately required by the functional language in the claims, the word "controller" imposes no limit at all on the claims. (*Id*. at ¶¶ 39-40.)

The patent law does not permit this sort of broad functional claiming and contains safeguards against it. For example, if the claims are as broad as Signify asserts, they are invalid because they cover abstract ideas. *See Alice Corp. Pty. v. CLS Bank Int'l*, 134 S. Ct. 2347, 2354 (2014) ("abstract ideas are not patent eligible"). The dimming claims describe the idea of dimming an LED light based on an AC dimmer signal. The non-dimming claims describe the idea of operating an LED light at constant brightness based on an AC dimmer signal. And the agnostic claims describe the idea of operating an LED light in any way based on an AC dimmer signal. The Supreme Court's *Alice* decision, as well as the many cases applying 35 U.S.C. § 101, explain that these abstract ideas are not patent-eligible unless they are tied to a specific technical solution. In

[7] A TRIAC dimmer outputs an A.C. signal whose duty cycle varies up or down as the dimmer's user interface is adjusted up or down.

Alice, the claims said, in effect: use a generic computer to implement an idea about intermediated settlement in banking. *See id.* at 2359 ("the relevant question is whether the claims here do more than simply instruct the practitioner to implement the abstract idea of intermediated settlement on a generic computer. They do not."). Signify's claims are analogous: they require using a "controller" to implement the idea of powering LEDs from an AC dimmer signal, but do not say *how* that idea should be implemented. *See, e.g.*, *Affinity Labs of Tex., LLC v. Directv, LLC*, 838 F.3d 1253, 1258 (Fed. Cir. 2016) (finding a claim invalid because there "is nothing in claim 1 that is directed to that is directed to how to implement out-of-region broadcasting on a cellular telephone"); *Koninklijke KPN N.V. v. Gemalto M2M GmbH*, 942 F.3d 1143, 1150 (Fed. Cir. 2019) (explaining that when a claim "contains no restriction on how the result is accomplished" and "[t]he mechanism ... is not described," then the claim is invalid); *ChargePoint, Inc. v. SemaConnect, Inc.*, 920 F. 3d 759, 769 (Fed. Cir. 2019) (invalidating claims "drafted in such a result-oriented way that they amounted to encompassing the 'principle in the abstract' no matter how implemented"); *Finjan, Inc. v. Blue Coat Sys., Inc.*, 879 F.3d 1299, 1305 (Fed. Cir. 2018) (finding that "a result, even an innovative result, is not itself patentable.").

Signify argues that a "controller is a structural device that controls voltage or current." But that proves its claim is purely functional, because in this context—where a controller is providing electrical power—voltage or current are the only things that *could* be controlled. (Zane Tr. 68:17-71:1; Shackle Decl. ¶ 37.) In other words, the definition Signify proposes for controller is effectively: "a structural device for doing what the claim requires in any possible way."

b) § 112 (f) applies to the term "controller"

In the 1930s and 1940s, the Supreme Court repeatedly rejected patent claims that described an invention "in terms of what it will do rather than in terms of its own physical characteristics or its arrangement in the new combination apparatus." *Halliburton Oil Well Cementing Co. v. Walker*,

329 U.S. 1, 9 (1946); *Gen. Electric Co. v. Wabash Co.*, 304 U.S. 364, 371 (1938) (rejecting claims that use "conveniently functional language at the exact point of novelty"). The *Halliburton* decision led Congress to enact what is now 35 U.S.C. § 112(f).[8] *See Warner-Jenkinson Co. v. Hilton Davis Chemical Co.*, 520 U.S. 17, 26-27 (1997). Section 112(f) allows a patent applicant to describe an element of his invention by the result accomplished or the function served, but requires such claim elements to be construed as limited to "the corresponding structure, material, or acts described in the specification and equivalents thereof." *Id.*; *Williamson*, 792 F.3d at 1347-48.

There is a presumption that claims that use the word "means" are governed by § 112(f), and those that do not are not. *Williamson*, 792 F.3d at 1348. However, this presumption can be rebutted, and does not elevate form over substance: "the essential inquiry is not merely the presence or absence of the word 'means' but whether the words of the claim are understood by persons of ordinary skill in the art to have a sufficiently definite meaning as the name for structure." *Id.* Thus, in the absence of the word "means," § 112(f) nonetheless applies if "the claim term fails to 'recite sufficiently definite structure' or else recites 'function without reciting sufficient structure for performing that function.' *Id.* at 1349. "Generic terms like 'module,' 'mechanism,' 'element,' and 'device' are commonly used as verbal constructs that operate, like 'means,' to claim a particular function rather than describe a 'sufficiently definite structure.'" *MTD Products Inc. v. Iancu*, 933 F. 3d 1336, 1341 (Fed. Cir. 2019); *Egenera, Inc. v. Cisco Systems, Inc.*, 972 F. 3d 1367, 1373 (Fed. Cir. 2020). Claim terms are subject to § 112(f) when they include "*any* structure capable of performing the claimed function." *Diebold Nixdorf*, 899 F.3d at 1301 (emphasis in original).

Here, while the claims do not use the term "means," the evidence shows that the term "controller" does not have a definite meaning as a name for structure. As Dr. Shackle explains, the

[8] 35 U.S.C. § 112(f) was until recently designated as § 112, paragraph 6, or as § 112(6).

claims would have the same scope if the words "means" was used instead of "controller." (Shackle Decl. ¶ 37.) Signify's proposed definition—"a structural device that controls voltage or current"—confirms this because it includes any possible way of implementing the claimed functions. Finally, the express definition in the specification of the '399 patent further confirms that "controller" does not have a definite meaning as a name for structure:

> The terms "processor" or "controller" are used herein interchangeably to describe various apparatus relating to the operation of one or more light sources. A processor or controller can be implemented in numerous ways, such as with dedicated hardware, using one or more microprocessors that are programmed using software (e.g., microcode) to perform the various functions discussed herein, or as a combination of dedicated hardware to perform some functions and programmed microprocessors and associated circuitry to perform other functions.

('399 patent, 6:19-28 (emphasis added.) This definition is entirely functional. It refers to structure but only to give examples showing anything can be used: dedicated hardware, or a processor with software, or some combination of hardware, processors, software, and associated circuitry.[9] Thus, the term "controller" in the '399 and '138 patents is subject to § 112(f) and should be construed as limited to "the corresponding structure, material, or acts described in the specification and equivalents thereof." *MTD Products*, 933 F. 3d at 1343-45 (finding "mechanical control assembly configured to" was primarily functional and subject to § 112(f)); *Egenera*, 972 F. 3d at 1375 (applying § 112(f) to a term that was "no more than a 'black box recitation of structure' that is simply a generic substitute for 'means.'") Signify cites a number of district court decisions finding that the term "controller" was not governed by § 112(f), but none of those cases involved a patent that expressly defined the term "controller" as "various apparatus relating to the operation of one

[9] Signify contends that the claims impart structure for "controller" because they indicate that the controller "receives a power-related signal from an alternating current (A.C.) power source" as well as "provides power to the at least one LED" (Op. Br. at 16); however, "inputs and outputs at a very high level" does not "inform the structural character of the limitation-in-question or otherwise impart structure to the" claimed "controller." *Williamson*, 792 F.3d at 1351.

or more light sources." Any meaning the term "controller" might have as a name for structure has been disclaimed here.

c) The corresponding structure for the "controller" terms.

The next step is to determine what structure in the specification, if any, corresponds to the functions recited in the claims for the "controller" terms. *See Williamson*, 792 F. 3d at 1351; *Egenera*, 972 F. 3d at 1373. Structure "corresponds" to a function when it is both "clearly linked" to the function by the specification, and is "sufficient" or "adequate" for performing that function. *Williamson*, 792 F. 3d at 1351-1352.

In this case, there are dozens of asserted claims that recite various different functions of the "controller." For space reasons they are not all addressed here. Instead, the appropriate corresponding structure for each claim is set forth in Appendix 2.

Generally, as mentioned above, there are also three groups of claims: dimming, non-dimming, and agnostic. Also generally—and as explained in detail by Dr. Shackle—the patents describe three different LED "controllers": a dimming controller, a non-dimming controller, and a processor-based controller. (Shackle Decl. ¶ 104.) Each of these controllers is described by both a high-level block diagram, and a more specific circuit diagram. (*See* Shackle Decl. at ¶¶ 105-144.) The non-dimming controller is corresponding structure for the non-dimming claims. (*See* Shackle Decl. at ¶¶ 105-123.) The dimming controller and the processor-based controller are corresponding structure for the dimming claims. (Shackle Decl. ¶¶ 124-130.) And all three controllers (dimming, non-dimming, and processor-based) are corresponding structure for the agnostic claims. (Shackle Decl. ¶¶ 131-144.)

The parties dispute two significant issues with respect to the corresponding structure for the "controller" terms. First, Signify argues that the dimming controller and a processor-based controller should be construed as corresponding structure for the non-dimming claims, because the

structures used for dimming could be "unused." (Op. Br. at 21.) But neither Signify nor Dr. Zane identifies any place in the specification that clearly links the functions of the non-dimming controller claims to a controller with dimming features that are "unused." Thus, this argument should be rejected. *See Tex. Digital Sys. v. Telegenix, Inc.*, 308 F.3d 1193, 1214 (Fed. Cir. 2002) (finding that the district court erred when it "relied on expert testimony to broaden its interpretation of the corresponding structure beyond that appearing in the specification.")

Second, Signify argues that the high-level block diagrams for each of the controllers—Figure 3 for the non-dimming controller, Figure 5 for the dimming controller, and Figure 7 for the processor-based controller, are sufficient structure, and that the claims should not be limited to the actual implementations described in Figures 4 (non-dimming controller), 6 (dimming controller) and 8-11 (processor-based controller). This argument should be rejected because each of Figures 3, 5, and 7 is a block diagram that does not identify sufficient structure for performing the claimed functions until it is combined with the more detailed figure(s) that follows it. (Shackle Decl. ¶¶ 105-123 (non-dimming controller); ¶¶ 124-130 (dimming controller); ¶¶ 131-144 (processor-based controller).) In *Texas Digital Systems v. Telegenix, Inc.*, the Federal Circuit evaluated U.S. Patent No. 4,734,619 and held that because "Fig. 3 and its accompanying text serve merely as overview for introducing and explaining Fig. 4, the corresponding structures must necessarily be found in Fig. 4."

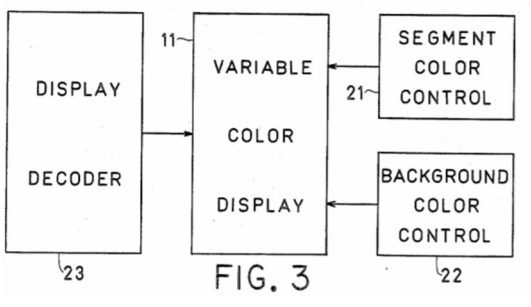


FIG. 3

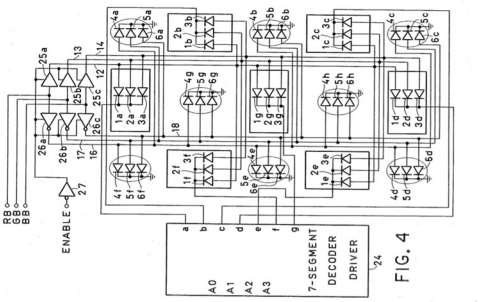


FIG. 4

308 F.3d 1193, 1212 (Fed. Cir. 2002). Here, the situation is directly analogous. As shown below, Figures 5 serves as an overview for introducing and explaining Figure 6.

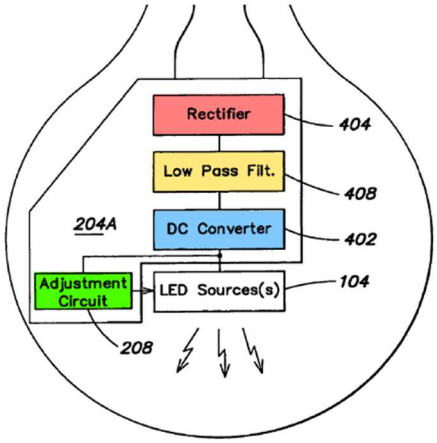


FIG. 5

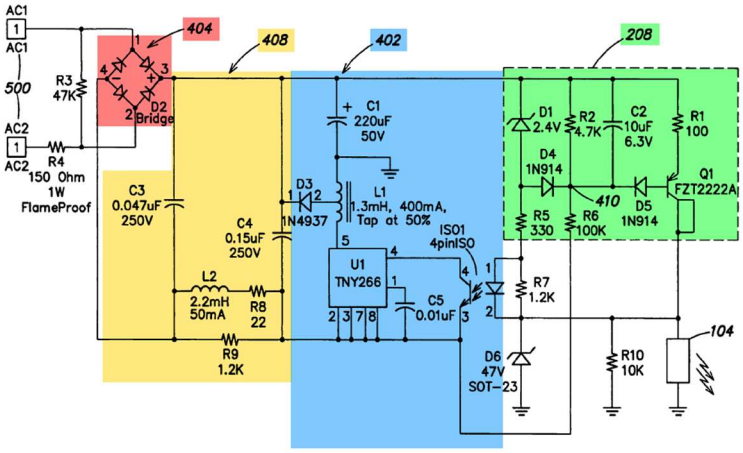


FIG. 6

The same is also true of Figures 3 and 4: Figure 3 serves as an overview for introducing and explaining Figure 4. Accordingly, as explained in *Texas Digital*, the corresponding structures must be found in Figures 4 and 6, not Figures 2 and 5. Another analogous case is *Bennett Marine, Inc. v. Lenco Marine, Inc.*, where Figure 1 depicted the "control circuit" merely as labeled box, Figure 2 provided specific circuit structure, and the Federal Circuit found: "the scope of the corresponding structure for the control circuit … should be limited to the specific circuit shown in figure 2, and not construed broadly as the generic circuit shown in figure 1." 549 F. App'x 947, 950, 954 (Fed. Cir. 2013); *see also Blackboard, Inc. v. Desire2Learn, Inc.*, 574 F.3d 1371, 1383 (Fed. Cir. 2009) (finding that "a black box that performs a recited function" is not sufficient structure for performing that function).

d) The method claim equivalents of "controller."

As identified in Appendix IV of Signify's opening brief, the several disputed terms are the method claim equivalents of claims containing the "controller" limitations addressed above. For example, claim 30 of the '399 patent requires "an act of: B) providing an essentially non-varying

power to the at least one LED over a significant range of operation of the user interface." This "act" has a function identical to a function of the controller of claim 1: "wherein the at least one controller is configured to provide an essentially non-varying power to the at least one LED over a significant range of operation of the user interface."

The same principles discussed above also apply to method claims:

> In general terms, the "underlying function" of a method claim element corresponds to what that element ultimately accomplishes in relationship to what the other elements of the claim and the claim as a whole accomplish. "Acts," on the other hand, correspond to how the function is accomplished. Therefore, claim interpretation focuses on what the claim limitation accomplishes, i.e., it's underlying function, in relation to what is accomplished by the other limitations and the claim as a whole. If a claim element recites only an underlying function without acts for performing it, then § 112, ¶ 6 applies even without express step-plus-function language.

Seal-Flex, Inc. v. Athletic Track & Court Const., 172 F.3d 836, 849–50 (Fed. Cir. 1999). Thus, the analysis provided above for the "controller" limitations applies equally to the method claims, because those claims use the generic phrase "an act [] of providing" and then recite a function. These method steps should be governed by 35 U.S.C. § 112(f) because they are purely functional; they do not provide any requirements about *how* the function should be performed.[10] Finally, as set forth in Appendix 2, the corresponding acts for these method claims are the same as the corresponding structures in the equivalent apparatus/controller claims: '399 claim 30 is the method version of '399 claim 1; '399 claim 34 is the method version of '399 claim 7, and '138 claim 33 is the method version of '138 claim 1.

[10] If the method claims are not construed pursuant to § 112(f), then they are invalid under § 101 for the reasons described above. *See, e.g.*, *Koninklijke KPN*, 942 F.3d at 1150 (Fed. Cir. 2019) (explaining that when a claim "contains no restriction on how the result is accomplished" then the claim is invalid).

2. "adjustment circuit"

a) The term "adjustment circuit" is governed by § 112(f).

Claims 17-19 of the '399 patent and 20-22 of the '138 patent require the controller to include "an adjustment circuit to variably control the at least one parameter of light based on the varying power-related signal." In the patents, the phrase "adjustment circuit" refers to a specific part of the dimming controller, element 208 (colored green):

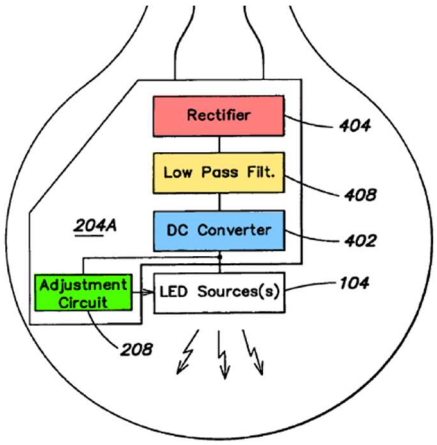


FIG. 5

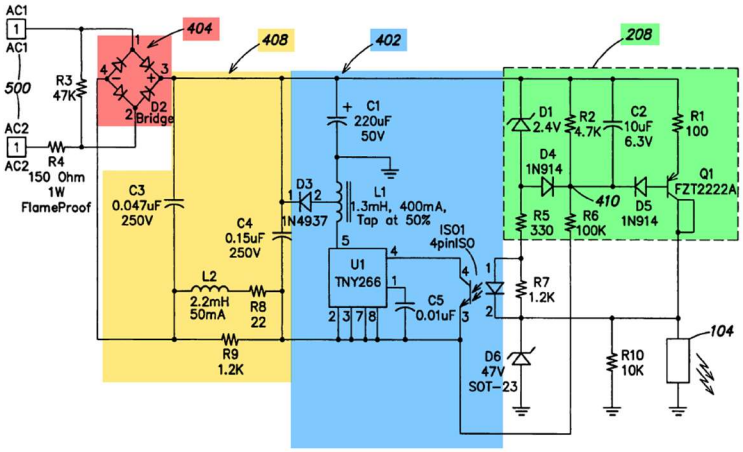


FIG. 6

However, the phrase "adjustment circuit" does not have a definite meaning as a name for structure. It could refer to broad range of circuits, from a simple resistor, a simple capacitor, to many different kinds of much more complex circuits. (Shackle Decl. ¶53; *see also* Zane Tr. at 100:5-14 ("adjustment circuits, you know, circuits for adjusting are quite common. It's almost ubiquitous … there are probably adjustment circuits in most circuits in that sense."); *id.* at 102:7-14; 106:10-23.) Thus, "adjustment circuit" is subject to § 112(f). *MTD Products*, 933 F. 3d at 1339-40, 1343-45 (relying on testimony that "mechanical control assembly" encompassed "a wide variety of structures" and reversing the conclusion that the term was structural merely because it denoted a specific structure in the specification).

The functional nature of "adjustment circuit" is also shown by the fact that the claims would have the same scope if the words "means" replaced "adjustment circuit" in the claims. (Shackle Decl. ¶¶ 51-57). *Egenera*, 972 F. 3d at 1375 (applying § 112(f) to a term that was "no more than a 'black box recitation of structure' that is simply a generic substitute for 'means.'")

b) The corresponding structure for the "adjustment circuit."

The next step is to determine what structure in the specification is both "clearly linked" to the adjustment circuit's function, and "sufficient" or "adequate" for performing that function. *See Williamson*, 792 F. 3d at 1351; *Egenera*, 972 F. 3d at 1373. Here, the phrase "adjustment circuit" refers to a specific part of the dimming controller, element 208 in Figure 6 (colored green in the image above). The circuitry shown in Figure 6 by the dotted-box 208 is sufficient to perform the function: "variably control the at least one parameter of light based on the varying power-related signal." (Shackle Decl. ¶¶ 70-80.) The processor-based controller shown in Figures 7-11 is also sufficient. (Shackle Decl. ¶ 82; *see* '399 patent, 16:67-17:48.) However, the box in Figure 5 is not sufficient on its own to perform that function. (Shackle Decl. ¶ 81.) Thus, Figure 5 does not provide corresponding structure for the "adjustment circuit"—instead it serves as overview for introducing and explaining Figure 6, which provides the structure. *Texas Digital Sys,* 308 F.3d at 1212; *see also Bennett Marine*, 549 F. App'x at 954 ("the scope of the corresponding structure for the control circuit … should be limited to the specific circuit shown in figure 2, and not construed broadly as the generic circuit shown in figure 1"); *Blackboard*, 574 F.3d at 1383 (Fed. Cir. 2009) ("a black box that performs a recited function" is not sufficient structure).

3. "power circuitry"

a) The term "power circuitry" is governed by § 112(f) in claim 17 of the of the '399 patent and claim 20 of the '138 patent.

Claims 17-18 of the '399 patent and claim 20-21 of the '138 patent require the controller to include "power circuitry to provide at least the power to the at least one LED based on the varying power-related signal." The phrase "power circuitry" would be understood by a person of ordinary skill in the art as a circuit that provides power to something, which includes a broad range of circuits: it could include a simple resistor, a simple capacitor, or much more complex circuits. (Shackle Decl. ¶61.) Thus, the phrase "power circuitry" does not have a definite meaning as a name for structure. Additionally, claim 17 of the '399 patent and claim 20 of the '138 patent would have same scope if "power circuitry" were replaced with "means." (Shackle Decl. ¶¶ 51-57). Thus, § 112(f) applies. *MTD Products*, 933 F.3d at 1343-45; *Egenera*, 972 F.3d at 1375.

In contrast, claim 18 of the '399 patent and claim 21 of the '138 patent add three components to the power circuitry: a "rectifier," a "low pass filter," and a "DC converter":

> 18. The apparatus of claim 17, wherein the power circuitry includes:
> a rectifier to receive the power-related signal and provide a rectified power-related signal;
> a low pass filter to filter the rectified power-related signal; and
> a DC converter to provide the power to at least the at least one LED based on the filtered rectified power-related signal.

The terms "rectifier" and "low-pass filter" identify structure to a person of ordinary skill. (Shackle Decl. ¶¶ 67, 99-102.) The term "DC converter" does not, because it describes many different types of circuits, from a simple capacitor to a switching converter. (Shackle Decl. ¶¶ 68, 103-107.) However, because the function of the power circuitry is so generic—providing power to the LED "based on" the varying power-related signal—the listed components are still sufficient to perform the function, even if something as simple as a capacitor is used for the DC converter. Thus, these two claims are not subject to § 112(f).

b) The corresponding structure for "power circuitry" in claim 17 of the of the '399 patent and claim 20 of the '138 patent.

In the patents, the phrase "power circuity" refers to element 108, which is shown in Figure 7 as a box (colored purple), and in Figure 8 as a specific circuit.

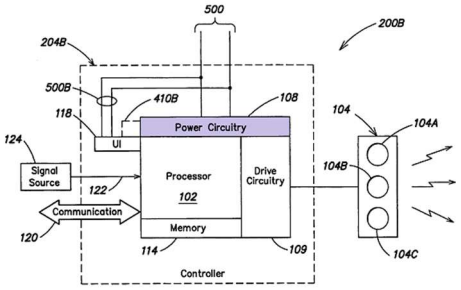


FIG. 7

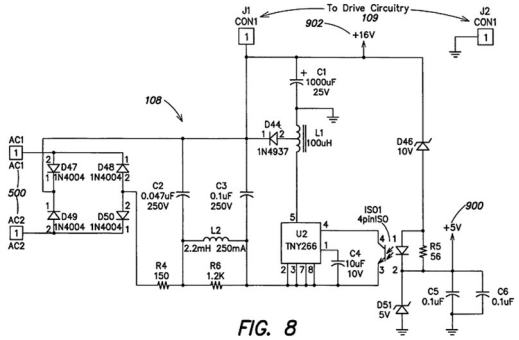


FIG. 8

(*See also* '399 patent, 8:49-50 ("FIG. 8 is a circuit diagram illustrating various components of the power circuitry for the lighting unit of FIG. 7"), 18:44-58). The circuitry shown in Figure 8 is sufficient to perform the function of providing power to the LED "based on" the varying power-related signal. (Shackle Decl. ¶¶ 132-140.) A person of ordinary skill would also consider the components in Figures 4 and 6 that correspond to the components of Figure 8 to be clearly linked to the function of the power circuitry: specifically, the "rectifier" circuit 404, "low pass filter" circuit 408, and "DC converter" circuit 402 in Figures 4 and 6. (*Id.*; *see also* '399 patent, 18:44-58 (linking the power circuitry of Fig. 8 to the similar or identical components in Figs. 4 and 6.)

4. "alternating current (A.C.) power source that provides signals other than a standard A.C. line voltage" ('399 claims 1, 7, 17, 30, 34; '138 claims 1, 33)

Signify's Proposed Construction	Satco's Proposed Construction
Power source that provides two or more alternating current (A.C.) signals, each being other than a sinusoidal wave at a standard frequency and amplitude.	A.C. power source that provides two or more A.C. signals but does not provide standard A.C. line voltage.

The parties dispute whether the term "alternating current (A.C.) power source that provides *signals other than a standard A.C. line voltage*" excludes power sources capable of providing a standard A.C. line voltage. Initially, "even if the two proposed constructions . . . presented an 'equal choice'—and they do not—[Satco's] narrower construction would be more appropriate." *Takeda Pharm. Co. v. Zydus Pharms. USA, Inc.*, 743 F.3d 1359, 1365 (Fed. Cir. 2014). As explained below, the specification and prosecution history confirm that this term is a negative limitation that defines the claimed power source by what it does not do (*i.e.*, not provide standard A.C. line voltage) as opposed to what it does. *See, e.g.*, *Inphi Corp. v. Netlist, Inc*., 805 F.3d 1350, 1352-53 (Fed. Cir. 2015) ("At issue in this appeal is a negative claim limitation . . . limiting the claimed chip selects to exclude three particular types of signals . . ."); *see also Wangs Alliance Corp. v. Philips Lighting N. Am. Corp.*, IPR2015-01294, Paper 48 at 10 (PTAB Nov. 23, 2016) ("[T]he plain reading of the claims invokes the negative limitation to define a class of signals from which power is drawn.").

A negative limitation is appropriate "when the specification describes a reason to exclude the relevant limitation." *Santarus, Inc. v. Par Pharm., Inc*., 694 F.3d 1344, 1351 (Fed. Cir. 2012). One way a patent can provide a "reason to exclude" is by "properly describing alternative features of the patented invention." *Inphi Corp.*, 805 F.3d at 1356. Here, '399 and '138 patents disclose both embodiments in which the A.C. power source is capable of "provid[ing] either a standard line voltage or signals other than standard line voltages" (see, e.g., '399 patent, 2:52-56) and embodiments in which the A.C. power source merely "provides signals other than standard line voltages" (see, e.g., '399 patent, 3:4-16), and claims 1 and 33 of the '138 patent and claims 1, 7, 17, 30 and 34 of the '399 patent (collectively, "the Power Source Claims") were all drafted to cover the latter set of embodiments. Since the patents "properly describ[e] alternative features" of

the claimed A.C. power source, they provide a "reason to exclude" A.C. power sources that can provide a standard line voltage from the claimed invention.

Satco's construction is also consistent with the prosecution history. The Power Source Claims each require "a power-related signal from *an alternating current (A.C.) power source that provides signals other than a standard A.C. line voltage*." During the hearing for IPR2015-01294 for the '399 patent, Signify[11] interpreted the claimed "alternating current (A.C.) power source" as a power source that does not provide a standard line voltage. In particular, Signify stated:

> "[I]f we follow through the claims here, in the first part, the controller is configured to receive an AC power-related signal from an alternating current power source that provides signals other than a standard AC line voltage. **So that at the beginning excludes the standard AC line voltage from the varying what we're varying is the power-related signal, not the standard AC line voltage**."

IPR2015-01294, Paper 48 at 43; *see also id.* at 39 ("Patent Owner agrees that a power-related signal is a signal other than a standard AC line voltage."). Thus, Signify argued that the "alternating (A.C.) power source" "excludes the standard AC line voltage" from the set of signals provided. (*Id.* at 48.) And "[w]hen the patentee unequivocally and unambiguously disavows a certain meaning [during the prosecution of a patent], the doctrine of prosecution history disclaimer narrows the meaning of the claim consistent with the scope of the claim surrendered." *Biogen Idec, Inc. v. GlaxoSmithKline LLC*, 713 F.3d 1090, 1095 (Fed. Cir. 2013); *see also Springs Window Fashions LP v. Novo Indus., L.P.*, 323 F.3d 989, 996 (Fed. Cir. 2003) (adopting a claim construction that excluded an embodiment, finding that "[b]ecause the patentee explicitly stated during prosecution that his claims differed from a single plate with multiple cutting edges, we construe the disputed claims to exclude the disclaimed single plate device"). This doctrine is

[11] In 2018, the patent owner named in IPR2015-01294—Philips Lighting—renamed itself to Signify. https://www.signify.com/en-in/our-company/news/press-releases/2018/20180516-philips-lighting-is-now-signify

extended to IPR proceedings to "ensure that claims are not argued one way in order to maintain their patentability and in a different way against accused infringers." *Aylus Networks, Inc. v. Apple Inc.*, 856 F.3d 1353, 1360 (Fed. Cir. 2017). Thus, the specification and Signify's statements during prosecution confirm that the claimed "power source" cannot provide a standard A.C. line voltage. Accordingly, Satco's construction should be adopted.

5. The A.C. dimmer circuit terms ('399 claims 1, 4, 7, 14, 17, 30, 34, 47, 48, 57, 58, 59; '138 claims 2, 3, 6, 9, 17, 34)

Signify's Proposed Construction	Satco's Proposed Construction
A circuit that provides an alternating current (A.C.) dimming signal.	Plain meaning.

First, Satco is not aware of any dispute between the parties that requires these terms to be construed. *See Vivid*, 200 F.3d at 803 (explaining that only the claim terms in controversy need to be construed).

Second, Signify's construction is incorrect because it creates redundancy: almost all the claims already require that the A.C. dimmer circuit provide an A.C. signal. For example, claim 1 states:

> 1. An illumination apparatus, comprising
> … at least one controller … configured to receive a power-related signal from an alternating current (A.C.) power source that provides signals other than a standard A.C. line voltage, …
> wherein the A.C. power source is an A.C. dimmer circuit,
> …

This claim already requires the AC dimmer circuit to be "an alternating current (A.C.) power source that provides signals other than a standard A.C. line voltage." To be an AC power source, it must provide AC signals. The same thing is true for claims 1, 4, 7, 14, 17, 30, 34 of the '399 patent and claims 2, 3, 6, 9, 17, 34 of the '138 patent. Claims 57-59 of the '399 patent similarly require the recited AC dimmer to "variably control a duty cycle of an *A.C. signal*."

The only asserted claims that do not require the signal from the dimmer to be an AC signal are claims 47-48 of the '399 patent. Those claims require that "the A.C. dimmer circuit is controlled … to vary the power-related signal." But they do not require the power-related signal to be an AC signal. This difference in claim language is presumed to be intentional, and should not be eliminated under the guise of claim construction.

E. U.S. Patent No. 7,256,554

The '554 patent generally relates to switching converters (also known as switching regulators) that do not use feedback. ('554 patent, 1:13-20, 1:50-2:3.) It gives examples of known switching converters in Figures 4-8, 9A, and 10-11. (*Id.* at 19:40-67.)

1. The "without" terms

Term	Signify's Proposed Construction	Satco's Proposed Construction
"without monitoring or regulating a first voltage or a first current" (claims 1, 6, 46, 51)	Plain and ordinary meaning.	Without directly/indirectly • monitoring a first voltage • monitoring a first current • regulating a first voltage • regulating a first current
"without using any feedback information relating to the at least one first LED" (claims 7, 52)	Plain and ordinary meaning.	Without directly/indirectly using any feedback information relating to the at least one first LED.

There are two potential disputes. Signify does not explain its view of the purported plain meaning of these phrases, and thus it is unclear whether there is a dispute.

The first potential dispute relates to the grammar of the "without monitoring or regulating a first voltage or a first current" phrase. In the context of the specification, this negative limitation is met if and only if none of the four actions are performed. In other words, a device that varies light intensity per the claim language "without monitoring a first voltage," but does "monitor a first current," could not infringe. Satco's proposed construction eliminates the possibility that this

phrase could be read disjunctively. This construction is consistent with the specification, which asserts that the purported invention achieves improvements relating to power efficiency, functional redundancy, and streamlined circuit designs having fewer components and smaller space requirements. ('554 patent, 12:10-20.) Such goals are allegedly achieved by, for example, providing a controlled predetermined power that does not rely on feedback, monitoring, or regulation relating to an LED load; doing so means that isolation components can be eliminated, circuit speed can be increased by omitting a feedback loop, and issues relating to circuit stability can be avoided. (*Id.* at 12:21-36.) The specification repeatedly refers to the features that its apparatus can operate "without," and uses combinations of "and," "or," and "and/or" that show the inventors meant to preclude each of the four possibilities implicated by the claim language. (*See, e.g.*, *id.* at Abstract ("without monitoring a load voltage and/or load current" & "without monitoring and/or regulating the voltage or current"), 1:18-20 ("without requiring any feedback from the load (e.g., without monitoring load voltage and current) and/or regulation of load voltage or load current."), 12:21-24 ("without requiring any feedback information from the load (i.e., without monitoring load voltage and/or current)."), 21:39-42 ("without requiring any feedback information from the load (e.g., without monitoring and/or regulation of load voltage and current)").)

The second potential dispute relates to whether the "without" clauses preclude "indirect" feedback, monitoring, or regulation. Satco's construction clarifies that the claim language is not limited to direct forms of feedback/monitoring/regulation, such as directly monitoring voltage that is delivered to a load. FIG. 8 provides a simple example:

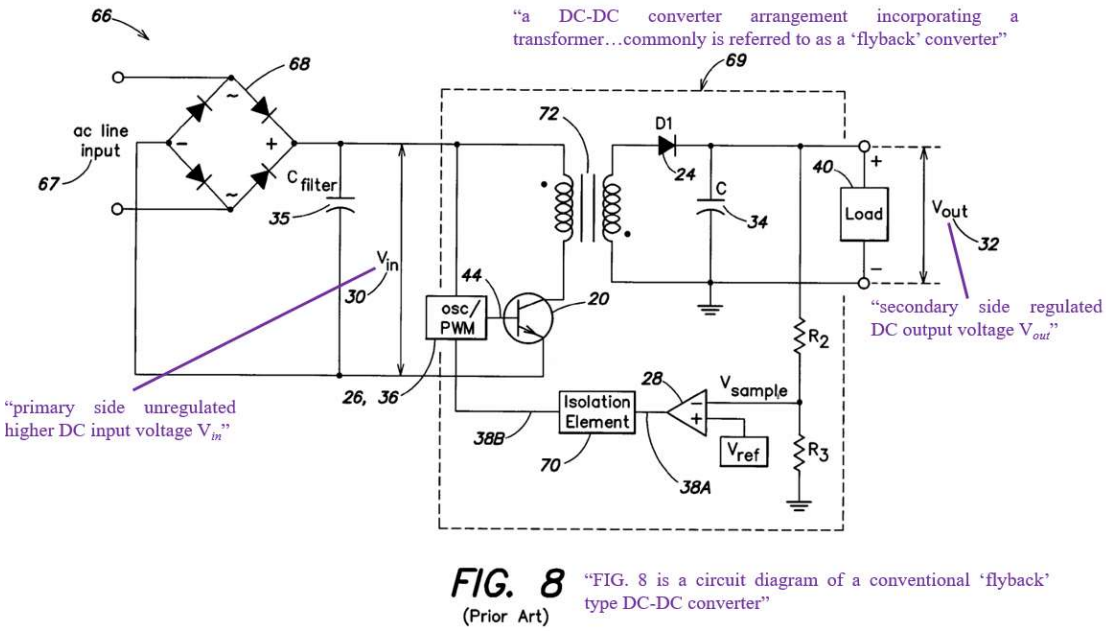


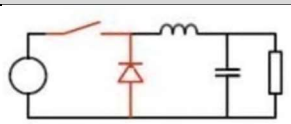
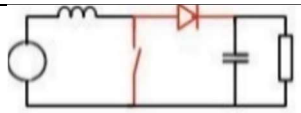
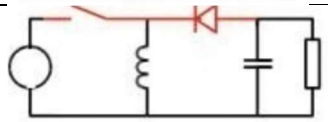
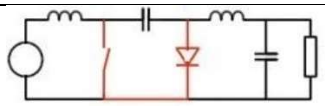
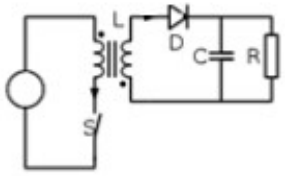
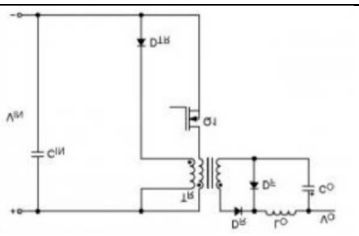
FIG. 8 (Prior Art)

"FIG. 8 is a circuit diagram of a conventional 'flyback' type DC-DC converter"

As the annotated version of FIG. 8 shows, conventional/prior art techniques for using feedback (and monitoring/regulating the voltage/current delivered to a load) used indirect techniques that relied on known relationships between circuit components and voltage/current. For example, in Fig. 8, feedback/monitoring/regulation is achieved using a voltage divider comprised of resistors R2 and R3 in order to obtain the voltage V_{sample}, which is a scaled-down sample voltage that indirectly represents the output voltage V_{out}. ('554 patent, Fig. 8, 6:66-7:38; *see id.* at Fig. 1, 3:36-50.) Thus, the negative "without" limitations do not merely preclude direct feedback/monitoring/regulation relating to the load; they preclude indirectly doing so through known circuit relationships, as shown in the context of the "conventional 'flyback' type DC-DC converter" illustrated in Fig. 8. (*Id.* at 19:49-50.)

2. The conventional converter terms (claims 2, 6, 47, 51)

Satco proposes that each converter type be construed to have its "plain meaning," which refers to a "conventional DC-DC converter typically having" the exemplary topologies identified in the table below:

Conventional DC-DC Converter Type (claims 2, 6, 47, 51)	**Satco's Exemplary Topology**
"buck converter" (*See, e.g.*, '554 patent, 1:50-58f)	
"boost converter" (*See, e.g.*, '554 patent, 4:15-27)	
"buck-boost converter" (*See, e.g.*, '554 patent, 4:15-27)	
"CUK converter" (*See, e.g.*, '554 patent, 4:15-27)	
"flyback converter" (*See, e.g.*, '554 patent, 7:5-13)	
"forward converter" (*See, e.g.*, '554 patent, 7:39-45)	

There does not appear to be a dispute about the meaning of the conventional DC-DC switching converters that are referenced in the claims of the '554 patent. Signify concedes that each type of converter was "conventional" and "well-known." (Op. Br. at 37.) At his deposition, Dr. Zane also confirmed that he agreed that these converters are conventional, and that Satco's exemplary topologies would be recognized by a POSITA as the corresponding type of conventional converter. (Zane Tr. at 163:18-169:17 (explaining that these converters were "well understood," "very well known" classes of devices, with "well-known topologies that could be found in textbooks or articles").) As Dr. Zane testified, he objected to Satco's proposed

construction to the extent that the words "conventional" and "typically" were intended to limit the scope of the asserted claims to the circuit topology identified in Satco's construction. (*Id.*) Of course, these topologies are non-limiting examples meant to assist the jury in understanding a well-known class of devices that is familiar to a POSITA but likely is not familiar to a lay juror. (Shackle Decl. ¶¶ 166-70.) Satco's proposed plain meaning should be adopted accordingly.

F. U.S. Patent No. 6,972,525

The '525 patent describes and claims an admittedly well-known type of switching converter called a SEPIC ("single ended primary inductance converter"). ('525 patent, 1:17-24.)

1. "self-inductance" (claim 1)

Signify's Proposed Construction	Satco's Proposed Construction
An inductive circuit component distinct from the claimed transformer.	Plain meaning, i.e., the property of an electric circuit whereby an electromotive force is induced in that circuit by a change of current in the circuit.

The parties do not appear to dispute the plain meaning of "self-inductance."[12] Instead, Signify argues that the plain meaning should not apply, and that Satco's construction (1) renders the term superfluous and (2) would read on embodiments in which the claimed "self-inductance" is not relatively large as in an embodiment described in the '525 patent. (Op. Br. at 45.)

Signify's first argument is misleading and mischaracterizes the evidence. In particular, the relevant claim language requires:

> [1-PRE] 1. A switching arrangement for operating at least one LED, which switching arrangement is provided with …
> [1c] a first series circuit … including at least ***a self-inductance***, a capacitor and a diode,
> [1d] a second series circuit … including at least ***said self-inductance*** and a switching element …
> [1e] a third series circuit … including at least said diode and ***an inductive winding***,

[12] Satco's proposed construction reflects the plain meaning. (Ex-M at 1020 (the definition of "self-inductance" set forth in the IEEE's "Authoritative Dictionary of IEEE Standards Terms").) Signify and its expert agree that "all practical components have a non-zero self-inductance," but dispute that the plain meaning of "self-inductance" should be applied. (Op. Br. at 45.)

> [1f] characterized in that ***the inductive winding forms a secondary winding of a transformer which has a primary winding which forms part of both the first and the second series circuits***.

As the emphasis above reflects, limitations 1c and 1d set forth the minimum ("at least") requirements of the first and second series circuits, and limitation 1f requires that those series circuits include a primary winding. Satco's construction is consistent with this claim language—the "self-inductance" of limitations 1c and 1d may be the self-inductance property of the primary winding. Contrary to Signify's argument, Satco's construction does not render any aspect of the claims superfluous. Instead, the claimed "self-inductance" refers to the self-inductance of the first and second series circuits. For practical purposes, the arrangement set forth in claim 1 will always have a "self-inductance" because transformer windings have a self-inductance. But this does not render the claim language superfluous, particularly when all of the claims of the '525 patent are considered. For example, while claim 1 (the only asserted claim) places no limitations whatsoever on the relative magnitude of this self-inductance, other claims in the '525 patent require a switching arrangement configured to satisfy the relationship $2\pi[(L\mathbf{1}+Ls)C\mathbf{3}]^{1/2}>\delta$. In this relationship, the self-inductance magnitudes must be considered to properly evaluate the relationship—L1 is the self-inductance of the first/second series circuits, and Ls is the self-inductance of the secondary winding of the transformer. A proper evaluation requires considering all of the self-inductance, rather than arbitrarily excluding the self-inductance of the primary winding per Signify's construction. (*E.g.*, '525 patent, claim 3, 1:59-2:4; Shackle Decl. ¶¶ 182-87 (illustrating that a transformer and its windings have magnetizing-, mutual-, leakage-, and self-inductance attribute).) Thus, Satco's construction does not render the claim language superfluous; it applies the plain meaning of the term in a manner that is appropriate for consistently applying this term across all of the claims, in a way that properly incorporates all of the claimed self-inductance. (*See* Shackle Decl. ¶¶ 175-88.)

Signify's second argument also mischaracterizes the evidence. Specifically, Signify argues that "self-inductance" cannot include the self-inductance of a transformer's primary winding in view of the specification, which Signify suggests treats "the transformer T has an **inductance** . . . that is significantly smaller than that of **self-inductance** L." (Op. Br. at 45 (emphasis added); Zane Decl. ¶¶ 100-01 (presenting the same argument and referring to "the self-inductance Ls of the transformer T").) But the '525 patent expressly shows that Ls is not the self-inductance of transformer T, it is the "self-inductance" of the secondary winding "SW:"

> L1 is the magnitude of the self-inductance in H,
> Ls is the magnitude of the self-inductance of the secondary winding in H,

('525 patent, 1:65-67.) The patent gives an additional example in which a transformer has two secondary windings, SW1 and SW2, each of which have a "self-inductance" of 50 μH. (*Id.* at 3:15-27.) Thus, Signify's attempt to redefine the term "self-inductance" to exclude the self-inductance of the primary winding must be rejected. It would be inappropriate to define "self-inductance" in a way that excludes transformer windings, when the '525 patent expressly uses "self-inductance" to refer to the inductive properties of such windings. (Shackle Decl. ¶¶ 182-87.)

Moreover, the meaning of self-inductance is not limited by the '525 patent's use of a winding symbol labeled "L" in FIGS. 1-2. This is a common way to represent the leakage inductance of a transformer in a circuit diagram—leakage inductance of a winding (which relates to self-inductance through a known formula) may be represented as an external inductor in the circuit, separate from the mutual or magnetizing inductance of the transformer itself. (Shackle Decl. ¶¶ 182-87 (citing Exs. L, P, and Q).) Leakage or self-inductance can also be manipulated by design, as Signify's expert concedes. (Zane Decl. ¶¶ 101-02; Shackle Decl. ¶¶ 182-87.) Accordingly, Signify's argument that the magnitude L of self-inductance in the first and second

series circuits in an example in the '525 patent is much larger than the self-inductance of the secondary winding does not suggest the self-inductance excludes the self-inductance of the primary winding. (*See* Op. Br. at 45.) A person of skill could simply design the self-inductance of the primary winding to be relatively higher or lower based on design needs, or could combine the self-inductance of the primary winding with one or more additional inductors—the claim language covers both options. (*See* Shackle Decl. ¶¶ 187-88.)

IV. CONCLUSION

For the foregoing reasons, Satco respectfully requests that the Court adopt its proposed constructions.

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CERTIFICATE OF SERVICE

The undersigned certifies that on this 21st day of December 2020, all counsel of record who are deemed to have consented to electronic service are being served with a copy of this document through the Court's CM/ECF system.

/s/
Nicholas Brown